

ARIZONA GAME AND FISH DEPARTMENT  
HERITAGE DATA MANAGEMENT SYSTEM

Animal Abstract

Element Code: ARADB05012

Data Sensitivity: No

**CLASSIFICATION, NOMENCLATURE, DESCRIPTION, RANGE**

**NAME:** *Chionactis occipitalis klauberi* (Stickel)

**COMMON NAME:** Tucson Shovel-nosed Snake

**SYNONYMS:** *Sonora occipitalis klauberi* Stickel, 1941

**FAMILY:** Colubridae

**AUTHOR, PLACE OF PUBLICATION:** Stickel, 1941.

**TYPE LOCALITY:** Tucson, Pima County, Arizona, U.S.A.

**TYPE SPECIMEN:** HT: SDNHM 29647 (Male). Vorhies, C.T., 1938-06-03.

**TAXONOMIC UNIQUENESS:** One of four subspecies in the species *Chionactis occipitalis*, and the most eastern subspecies in this species.

**DESCRIPTION:** This snake has a cream colored whitish or yellowish body with approximately 21 or more black or brown bands across the back that is saddle like, but may encircle the body. Between these bands are black or brown smaller bands. The snout is flattened and shaped somewhat like a shovel. The lower jaw is deeply inset and the upper jaw (snout) does not jut below the lower jaw. The scales are smooth, in 15 rows and the anal plate is divided. The hatchlings are about 4 inches (10 cm) and the adults are 10-17 inches (25-42 cm).

**AIDS TO IDENTIFICATION:** This snake is distinguished from the other subspecies by black or brown secondary bands between the primary bands, and it usually has fewer than 152 ventral scales in males and fewer than 160 in females.

**ILLUSTRATIONS:**

Color photo (Brennan *in* <http://www.brennanart.com/h-c-o-klauberi.html>).

Color picture (Behler, 1972: pl. 612)

Color picture of species (Behler, 1972: pl. 604)

**TOTAL RANGE:** South central Arizona, in Pima, western Pinal and eastern Maricopa counties.

**RANGE WITHIN ARIZONA:** Historically, this subspecies was known from Pima County in the Avra and Santa Cruz valleys and from western Pinal and a portion of eastern Maricopa counties. One-third of their range, as of 2001, has been converted to either urban development or

agriculture. Although no systematic surveys have been conducted to assess the Tucson Shovel-nosed snakes status throughout their range, the area between the Tucson and Phoenix metropolitan areas is believed to encompass the majority of their current range. Particularly west of Tucson northward along Avra Valley in Pima County to western Pinal County, and then north into eastern Maricopa County. (AGFD 2008, in FWS 2010).

## **SPECIES BIOLOGY AND POPULATION TRENDS**

**BIOLOGY:** Highly adapted to burrowing with its small shovel-shaped head, valved nostrils, flattened belly and smooth scales. Originally thought to be primarily nocturnal in activity, Tucson Shovel-nosed snakes have been documented as being active during crepuscular and daylight hours (FWS 2010). They are predominantly active in air temperatures between 70 and 90 F° (21 and 32 C°). Rosen et al. (1996, in FWS 2010) notes that activity seems to be highest when the summer and spring temperature are moderate, and when the relative humidity is high. When active it is generally foraging for such prey as insects, centipedes and scorpions which it often stalks from beneath the surface of the sand or loose soil. It has a natural resistance to scorpion stings.

The approximately required home range for this snake is 5 acres. It has no known corridor or migratory needs but potential barriers may include highways, major roads and streams. This snake moves by a swimming, sideways swaying motion under or on the surface of sand or loose soil. It usually rests by day under hiding cover such as shrubs including creosote bush, although it may occasionally be found under surface objects such as boards. It roams above and below the ground surface at night, but will flee from bright light such as a lantern or flashlight and away from disturbance. It typically explores an area of some 10 or 15 square feet next to the bush and may climb the bush in search of food or when frightened. If approached by an individual, the snake may flee in a more-or-less direct route to another bush or climb the nearest bush. The males are found to engage in contact with each other.

**REPRODUCTION:** Reproductive activity for shovel-nosed snakes in general occurs in April through July, with clutch sizes ranging from 2-4(-9) eggs.

**FOOD HABITS:** Shovel-nosed snakes are nocturnal, and often forages for insects, centipedes, spiders, buried moth pupae and scorpions which many times it stalks from beneath the surface of the sand or loose soil. It has a natural resistance to scorpion stings. In captivity, this species was observed to eat crickets, scorpions, coleopteran and lepidopteran larvae, silverfish, termites, immature grasshoppers, small native cockroaches, spiders and earwigs. Food animals accepted ranged from 4-32mm in length; hard-bodied prey such as beetles is not preferred. Feeding behavior of captive snakes was observed by Glass (1972). Snakes subdued prey by one of two means: striking and grasping with the mouth, or looping the anterior third of the body in a single

loop over the prey and pressing it against the substrate, then seizing the prey with the mouth. Missing was common when striking was used, but not when looping was used.

**HABITAT:** While other subspecies of shovel-nosed snakes are found in scattered sand hammocks, crowned with mesquite or other desert shrubs, Rosen (2003 in FWS 2010) suggests that the Tucson Shovel-nosed snake is found in more productive creosote-mesquite floodplain habitats, with soils described as soft, sandy loams, with sparse gravel.

**ELEVATION:** 785 – 1,662 ft (239-507 m); historically up to 2,300 ft (701 m).

**PLANT COMMUNITY:** Unknown

**POPULATION TRENDS:** Decreasing due to loss of habitat due to urban development and agriculture.

## **SPECIES PROTECTION AND CONSERVATION**

**ENDANGERED SPECIES ACT STATUS:** C (USDI, FWS 2010)  
[C USDI, FWS 2011]

**STATE STATUS:** None

**OTHER STATUS:** Not Bureau of Land Management Sensitive  
(USDI, BLM AZ 2010)  
[Bureau of Land Management Sensitive  
(USDI, BLM AZ 2005, 2008)]

**MANAGEMENT FACTORS:** Loss of habitat to agricultural and urban development is likely to continue to threaten this species in portions of its range. This subspecies has suffered significant losses of habitat due to agricultural development in the Avra Valley. Off-road vehicle activities will adversely affect this species. It may also be impacted by scientific and commercial collecting. According to FWS (2010), road construction, use and maintenance pose unique threats to herpetofauna including the Tucson Shovel-nosed snake, its prey base, and the habitat where it occurs through: “(1) fragmentation, modification, and destruction of habitat; (2) increased genetic isolation; (3) alteration of movement patterns and behaviors; (4) facilitation of the spread of non-native species via human vectors; (5) increased recreational access and the likelihood of subsequent, decentralized urbanization; (6) interference with or inhibition of reproduction; and (7) population sinks through direct mortality.”

**PROTECTIVE MEASURES TAKEN:** Pima County will allow no net unmitigated loss or fragmentation of habitat for this species in reserve system areas. Pima County will protect the existing habitats, as delineated within the priority conservation areas, which are in the reserve system from all potentially detrimental activities until they have been surveyed for this species.

Where this species is found, any development plans will require consideration of, and commitment to, appropriate mitigation for this species.

**SUGGESTED PROJECTS:** Further genetic studies including nuclear markers, are needed to resolve taxonomic problems within the species.

**LAND MANAGEMENT/OWNERSHIP:** BIA – Tohono O’Odham Nation, DOD – Florence Military Reservation, State Land Department, Private. Historically: BLM – Tucson Field Office, BOR – Phoenix Area, NPS – Casa Grande National Monument.

## **SOURCES OF FURTHER INFORMATION**

### **REFERENCES:**

- Behler, J.L. 1972. The Audubon Society Field Guide to North American Reptiles and Amphibians. Alfred A Knopf, New York, New York. P. 594.
- Brennan, T. Available at: <http://www.brennanart.com/h-c-o-klauberi.html>.
- eNature. Available at:  
<http://www.enat.../showSpeciesSH.asp?curGroupID=7&shapeID=1060&curPageNum=6&recnum=AR061>.
- HerpNet.org. Data pull of *Chionactis occipitalis klauberi* records. Accessed 2010-04-01.
- HerpScope. Available at:  
<http://www.herpguide.cgi?Action=lookup&BA=taxonomy&Order=Serptentes&BK=Chionactis+occipitalis&BX=Species>.
- NatureServe Explorer: An online encyclopedia of life [web application].2001. Version 1.6. Arlington, Virginia, USA: NatureServe. Available: <http://www.natureserve.org/explorer>. (Accessed: June 12, 2002).
- Pima County Board of Supervisors. 2000. Priority Vulnerable species: Data Compilation and Synthesis, Sonoran Desert Conservation Plan.
- USDI, Bureau of Land Management. 2005. Arizona BLM Sensitive Species List.
- USDI, Bureau of Land Management Region 2. 2008. Arizona BLM Sensitive Species List.
- USDI, Bureau of Land Management Region 2. 2010. Arizona BLM Sensitive Species List.
- USDI, Fish and Wildlife Service. 2010. Endangered and Threatened Wildlife and Plants; 12-Month Finding on a Petition to List the Tucson Shovel-nosed Snake (*Chionactis occipitalis klauberi*) as Threatened or Endangered with Critical Habitat. Proposed Rule; Notice of 12-month petition finding. Federal Register 75(61): 16050-16065.
- USDI, Fish and Wildlife Service. 2011. Endangered and Threatened Wildlife and Plants; Review of Native Species That Are Candidates for Listing as Endangered or Threatened; Annual Notice of Findings on Resubmitted Petitions; Annual Description of Progress on Listing Actions; Notice of Review. FR 76(207):66432.

**MAJOR KNOWLEDGEABLE INDIVIDUALS:**

Cecil Schwalbe – University of Arizona, Tucson, Arizona.  
Roy Averill-Murray – USFWS, Reno Nevada.

**ADDITIONAL INFORMATION:**

**Revised:** 2002-08-05 (AMS)  
2010-04-01 (SMS)

To the user of this abstract: you may use the entire abstract or any part of it. We do request, however, that if you make use of this abstract in plans, reports, publications, etc. that you credit the Arizona Game and Fish Department. Please use the following citation:

Arizona Game and Fish Department. 20XX (= **year of last revision as indicated at end of abstract**). X...X (= **taxon of animal or plant**). Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, AZ. X pp.